



PJ2301

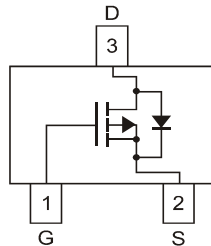
20V P-Channel Enhancement Mode MOSFET

FEATURES

- $R_{DS(ON)}$, $V_{GS} @ -1.8V, I_D @ -1.5A = 200m\Omega$
- $R_{DS(ON)}$, $V_{GS} @ -4.5V, I_D @ -2.2A = 105m\Omega$
- Advanced Trench Process Technology
- High Density Cell Design For Ultra Low On-Resistance
- Specially Designed for DC/DC converters
- Low gate charge
- Specially designed for DC/DC converters

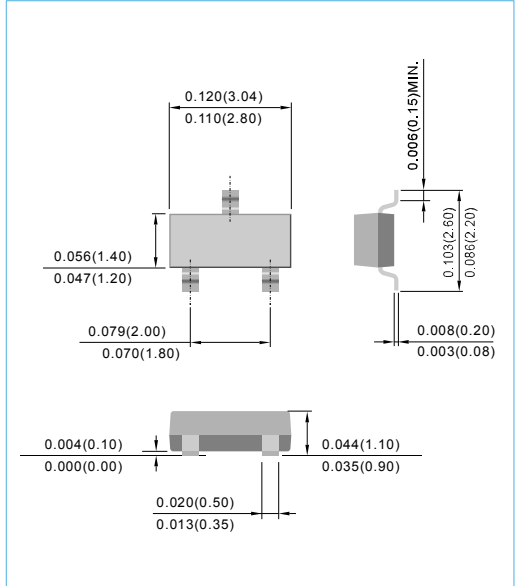
MECHANICAL DATA

Dimensions in inches and millimeters.
 All dimensions are nominal.
 Lead length is minimum.
 Lead thickness is maximum.



SOT-23

Unit : inch(mm)



Maximum Ratings and Thermal Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER		Symbol	Limit	Units
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 8	V
Continuous Drain Current (Notes 1)	Steady-State	I_D	$T_A = 25^\circ\text{C}$	A
	Steady-State		$T_A = 70^\circ\text{C}$	
	$t \leq 5s$		$T_A = 25^\circ\text{C}$	
Pulsed Drain Current (Notes 1)		I_{DM}	10	A
Power Dissipation (Notes 2)		P_D	$T_A = 25^\circ\text{C}$	700
			$T_A = 70^\circ\text{C}$	450
Typical Thermal Resistance (Notes 1)		$R_{\theta JA}$	175	$^\circ\text{C/W}$
Typical Thermal Resistance (Notes 1)		$R_{\theta JL}$	65	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to + 150	$^\circ\text{C}$

NOTES:

1. Mounted on minimum pad layout.
2. Mounted on 48cm^2 FR-4 PCB board.



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ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D = -250\mu A$	-20	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D = -250\mu A$	-0.5	-0.7	-0.9	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -2.2A$	-	90	105	mΩ
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = -2.5V, I_D = -1.7A$	-	120	140	
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = -1.8V, I_D = -1.5A$	-	170	200	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -16V, V_{GS}=0V$	-	-	-1	μA
Gate Body Leakage	I_{GSS}	$V_{GS} = \pm 8V, V_{DS}=0V$	-	-	±100	nA
Dynamic						
Forward Transconductance	g_{FS}	$V_{DS} = -10V, I_D = -1.7A$	4	6	-	S
Total Gate Charge	Q_g	$V_{DS} = -10V, I_D = -2.2A$ $V_{GS} = -4.5V$	-	4	-	nC
Gate-Source Charge	Q_{gs}		-	0.5	-	
Gate-Drain Charge	Q_{gd}		-	1	-	
Turn-On Time	t_{on}	$V_{DD} = -16V,$ $I_D = -2.2A, V_{GS} = -4.5V$ $R_{GEN} = 2.5\Omega$	-	8	-	ns
Turn-Off Time	t_{off}		-	35	-	
Turn-On Rise Time	t_r		-	15	-	
Turn-Off Fall Time	t_f		-	25	-	
Input Capacitance	C_{iss}	$V_{DS} = -10V, V_{GS}=0V$ $f=1.0MHz$	-	200	300	pF
Output Capacitance	C_{oss}		-	90	140	
Reverse Transfer Capacitance	C_{rss}		-	40	60	
Gate Resistance	R_g	$V_{DS}=0V, V_{GS}=0V$ $f=1.0MHz$	-	12	-	Ω
Source-Drain Diode						
Max. Diode Forward Current	I_s	-	-	-	-2	A
Diode Forward Voltage	V_{SD}	$I_s = -1A, V_{GS}=0V$	-	-0.79	-1	V
Body-Diode Reverse Recovery Time	t_{rr}	$I_s = -2.1A, di/dt=100A/\mu s$	-	30	-	ns
Body-Diode Reverse Recovery Charge	Q_{rr}		-	12	-	nC



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CHARACTERISTIC CURVES

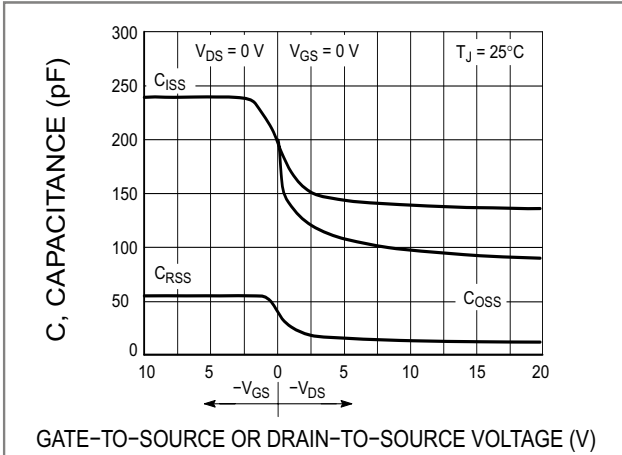


Fig.1 Capacitance Variation

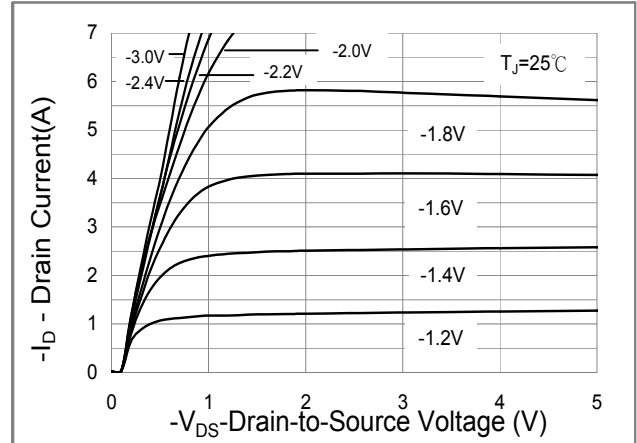


Fig.2 On-Region Characteristics

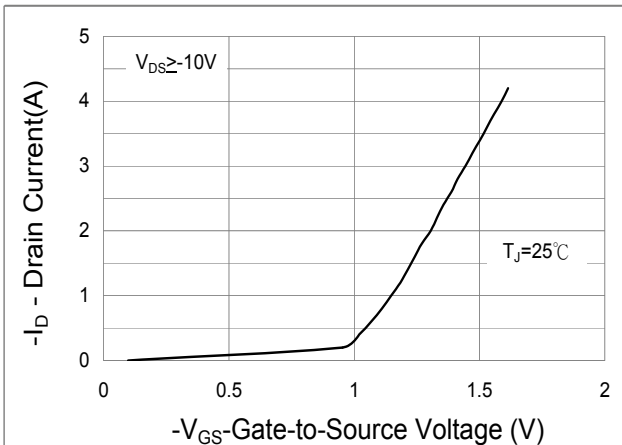


Fig.3 Transfer Characteristics

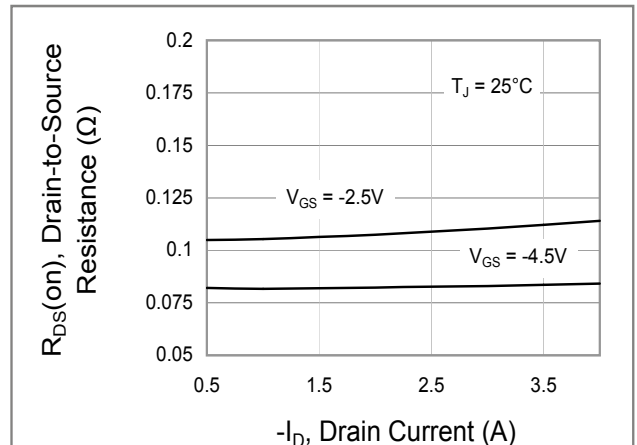


Fig.4 On-Resistance vs. Drain Current and Gate Voltage

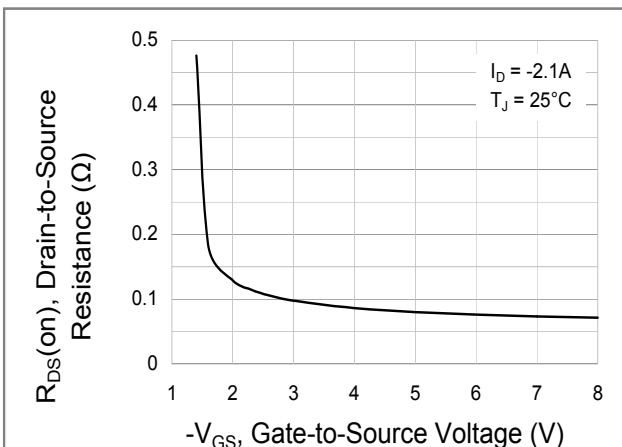


Fig.5 On-Resistance vs. Gate-Source Voltage

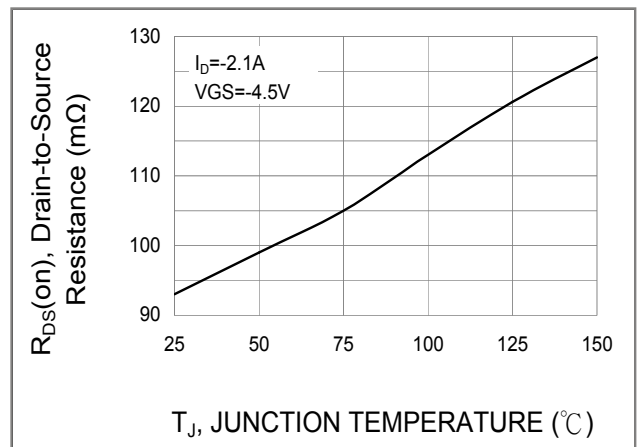


Fig.6 On-Resistance Variation with Temperature



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CHARACTERISTIC CURVES

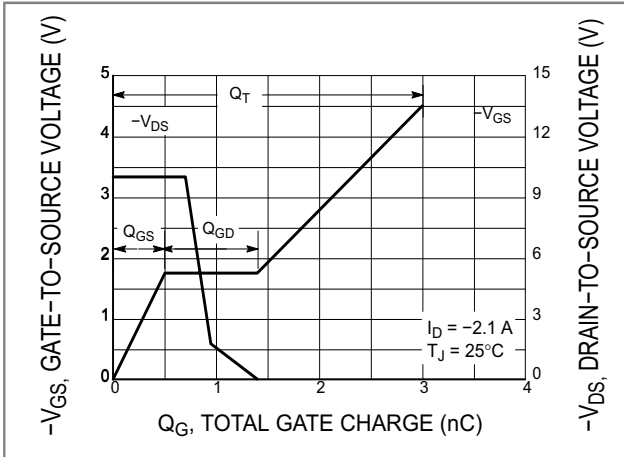


Fig.7 Gate-to-Source and Drain-to-Source vs. Total Charge

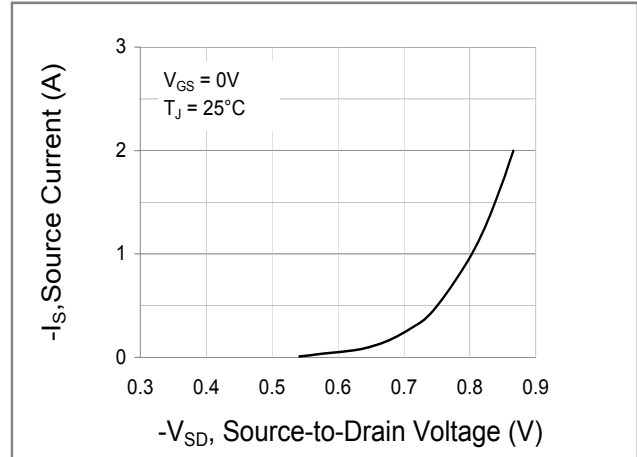


Fig.8 Diode Forward Voltage vs. Current

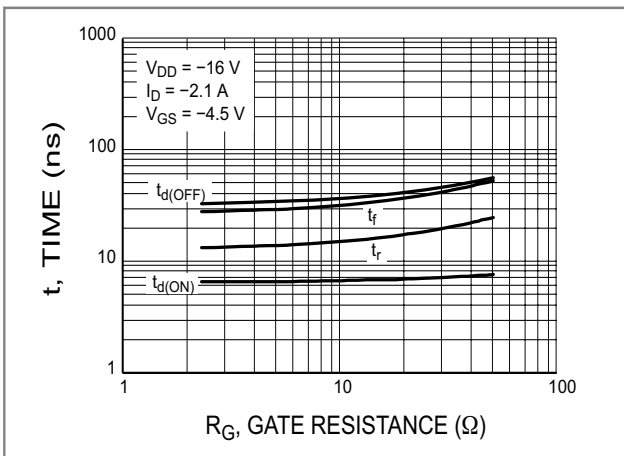


Fig.9 Resistive Switching Time Variation vs. Gate Resistance

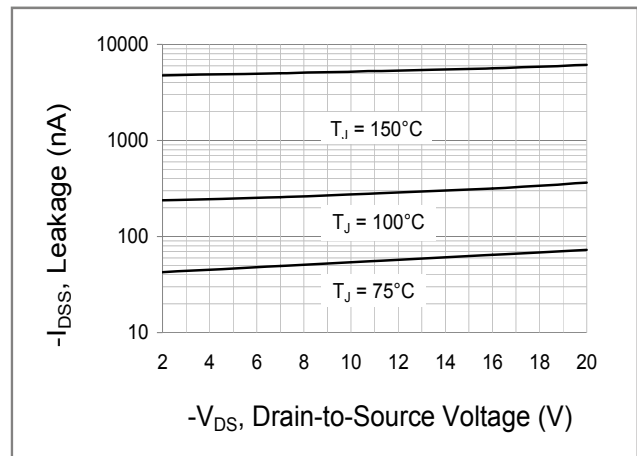


Fig.10 Drain-to-Source Leakage Current vs. Voltage

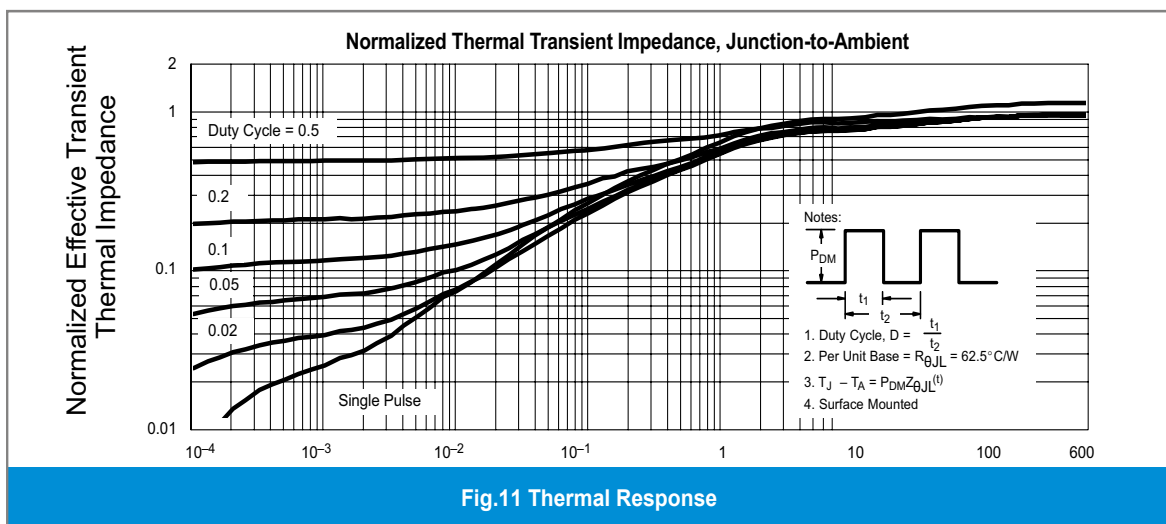
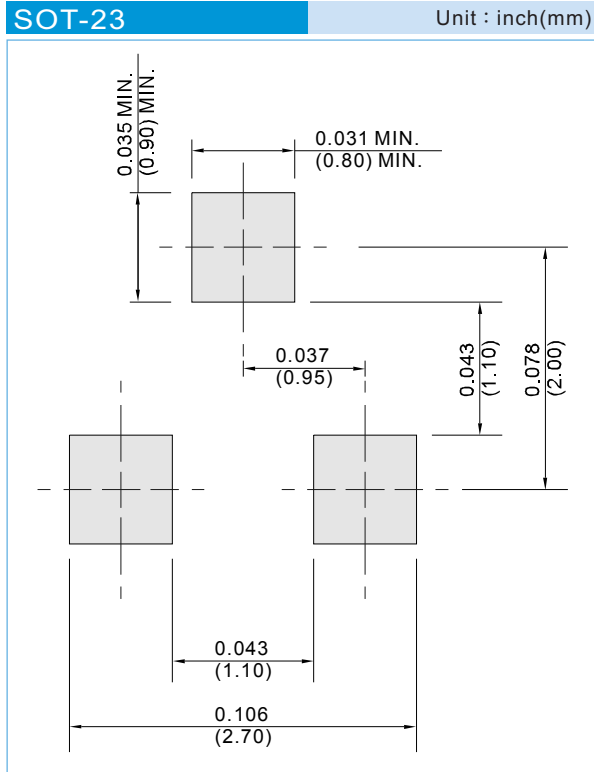


Fig.11 Thermal Response



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MOUNTING PAD LAYOUT



ORDER INFORMATION

- Packing information
 - T/R - 12K per 13" plastic Reel
 - T/R - 3K per 7" plastic Reel



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Part No_packing code_Version

PJ2301_R1_00001

PJ2301_R2_00001

For example :

RB500V-40_R2_00001



Packing Code XX				Version Code XXXXX		
Packing type	1 st Code	Packing size code	2 nd Code	HF or RoHS	1 st Code	2 nd ~5 th Code
Tape and Ammunition Box (T/B)	A	N/A	0	HF	0	serial number
Tape and Reel (T/R)	R	7"	1	RoHS	1	serial number
Bulk Packing (B/P)	B	13"	2			
Tube Packing (T/P)	T	26mm	X			
Tape and Reel (Right Oriented) (TRR)	S	52mm	Y			
Tape and Reel (Left Oriented) (TRL)	L	PANASERT T/B CATHODE UP (PBCU)	U			
FORMING	F	PANASERT T/B CATHODE DOWN (PBCD)	D			



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